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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] this invention was contained to the cartridge which can be renewed -- granular or abbreviation -- it is related with the drugs vaporization approach of vaporizing drugs in ordinary temperature, by using the wind force which gives a centrifugal force to a granular drugs sinking-in object, and is produced in this case. Furthermore, in detail, this invention equips an airstream appearance [of a sirocco fan], and/or airstream close side with said cartridge, for example, gives a centrifugal force to said drugs sinking-in object by rotating said cartridge by the motor, and relates to the drugs vaporization approach that drugs can be continuously vaporized at a fixed vaporization rate from said drugs sinking-in object for a long time.
[0002]
[Description of the Prior Art] Although the mosquito coil using heat energy , an electric mosquito-repellent mat , and liquid type electrical and electric equipment mosquito-repellent (liquid) be common as the drugs vaporization approach of make the whole closing space (for example , the interior of a room of a building or an automobile , inside of the tentorium in outdoor sports) vaporize and emit drugs in order to exterminate a noxious insect , for example , a mosquito , ** , etc. , the method of use a fan etc. wind force and make drugs vaporize and emit in ordinary temperature be also try . The drugs vaporization approach which uses fire and the electrical and electric equipment from a power receptacle may be difficult to use it in respect of reservation of safety or a power source. For example, when using it within tentorium, it is desirable to use the approach of making drugs vaporizing and emitting in ordinary temperature, and if a fan's etc. wind force is used for the vaporization of drugs in this case, compared with the case where drugs (or drugs sinking-in object) are left as it is, the vaporization effectiveness of drugs can be raised very much.
[0003] The approach of the former many is proposed as an approach of making drugs vaporizing and emitting in ordinary temperature. For example, the sinking-in object which holds drugs and has moderate permeability is installed in a fan's perimeter, and the instrument constituted so that the wind from a fan might be hit to this is indicated by JP,61-182273,U. Moreover, the drugs sinking-in object made granular is put into a sinking-in object container, and the method of vaporizing drugs is indicated by JP,10-191862,A, hitting the wind from a fan to this and stirring this drugs sinking-in object with a wind force. Furthermore, the diffusion approach of vaporization nature drugs of diffusing vaporization nature drugs in mind is indicated by making JP,5-68459,A rotate the diffusion material holding vaporization nature drugs.
[0004]
[Problem(s) to be Solved by the Invention] However, the drugs sinking-in object is contained by the stationary stowage container in the instrument of JP,61-182273,U, or the instrument used by the approach of JP,10-191862,A. Although to hit the wind from a fan to the granular object which is a drugs sinking-in object, and to stir this granular object with a wind force is tried by the approach indicated by JP,10-191862,A, a small fan's wind force is not big and it is difficult for this to fully stir said whole

granular object. So, by the approach of JP,10-191862,A, it is difficult to vaporize drugs in the amount of fixed vaporization over a long period of time from the granular object which is a drugs sinking-in object, and it is not avoided that a vaporization dose decreases with time. It is difficult to have adopted the diffusion material which comes to enclose vaporization nature drugs with the bag or container which has the bag which has the film section which consists of a gas permeability film by the approach indicated by JP,5-68459,A, a container, or the micropore which can carry out aeration, and to vaporize drugs efficiently from the whole vaporization nature drugs on the other hand, and it is not avoided that a vaporization dose decreases with time. So, it is difficult to hold the vaporization dose stabilized over the long period of time more than for ten days by this approach.

[0005] It is in offering the drugs vaporization approach of having many advantages -- this invention being for solving the trouble of said conventional technique, it being applicable also in the outdoors, and the place made into the purpose being stabilized, being able to vaporize the drugs of about 1 quantum over a long period of time, and holding the insecticidal potencial which was [which it is not in the former] excellent, its safety being high, and usability being good.

[0006]

[Means for Solving the Problem] this invention persons vaporize drugs, as a result of inquiring wholeheartedly, in order to solve the trouble of said conventional technique -- making -- hitting -- granular or abbreviation -- by giving a centrifugal force to a granular drugs sinking-in object, the knowledge of the ability to do so the vaporization engine performance stabilized over the long period of time (for example, use of 12 hours per day -- it is -- the period for 30 days -- crossing) is carried out, and it came to complete this invention. namely, that the drugs vaporization approach of this invention is granular or abbreviation -- a granular drugs sinking-in object It is the drugs vaporization approach of vaporizing the drugs into which said drugs sinking-in object was infiltrated under the situation that contain to the cartridge which has the aeration section on a side face, and a centrifugal force acts on said drugs sinking-in object by rotation of this cartridge. said -- granular or abbreviation, while setting the average outer diameter of a granular drugs sinking-in object to 3mm - 10mm and infiltrating 100mg or more of drugs into said drugs sinking-in object on the whole It is characterized by being 0.01-0.5mg per hour in the amount of vaporization about said drugs sinking-in object to drugs, and using the drugs which can vaporize over 180 hours or more as said drugs, [i is called hereafter]. Especially the approach of the following this inventions is desirable.

ii) -- the magnitude of said centrifugal force -- 9.8x10-1 cm/s2 - 9.8x104 cm/s2 it is -- the drugs vaporization approach of i characterized by things.

iii) The drugs vaporization approach of i that said drugs sinking-in object is characterized by filling up with 20% - 70% of voidage in said cartridge.

iv) The drugs vaporization approach of i characterized by rotating said cartridge by the motor.

v) The drugs vaporization approach of iv that the rotational frequency of said motor is characterized by being 100 - 2000rpm.

vi) The drugs vaporization approach of i characterized by equipping an airstream appearance [of a sirocco fan], and/or airstream close side with said cartridge.

vii) The drugs vaporization approach of vi characterized by the configuration of said cartridge being annular and equipping the airstream appearance side of said sirocco fan with said cartridge.

viii) The drugs vaporization approach of vi which the configuration of said cartridge is disc-like, and is characterized by equipping the airstream close side of said sirocco fan with said cartridge.

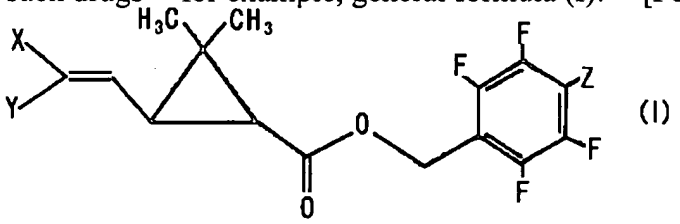
ix) Said drugs Following group:2, 3 and 5, 6-tetrafluoro benzyl-chrysanthemate (compound A), 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl 3-(1-propenyl) cyclopropane carboxylate (compound B), 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl-3-(2 and 2-dichloro vinyl) cyclopropane carboxylate (compound C), 4-methyl - 2, 3, 5, 6-tetrafluoro benzyl-chrysanthemate (compound D), 4-methyl - 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl-3-(1-propenyl) cyclopropane carboxylate (compound E), 4-methyl - 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl-3-(2 and 2-difluoro vinyl) cyclopropane carboxylate (compound F), 4-methoxymethyl - 2, 3, 5, 6-tetrafluoro benzyl-chrysanthemate (compound G), 4-methoxymethyl - 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl-3-(1-propenyl) cyclopropane carboxylate (compound H), 2, 3, 4,

5, the 6-pentafluoro benzyl -2, 2-dimethyl 3-(2-clo low 2-trifluoro methylvinyl) cyclopropane carboxylate (compound I), 4-propargyl - 2, 3, 5, 6-tetrafluoro benzyl-3-(1-propenyl)-2, and 2-dimethyl cyclopropane carboxylate (compound J), 4-methoxymethyl [- 2, 2, 3,] - 2, 3, 5, 6-tetrafluoro benzyl - 2, 2, 3, and 3-tetramethyl cyclopropane carboxylate (compound K) and 4-propargyl - 2, 3, 5, 6-tetrafluoro benzyl The drugs vaporization approach of i characterized by consisting of a kind of compound chosen from 3-tetramethyl cyclopropane carboxylate (compound L) at least.
x) The drugs vaporization approach of i which much aeration sections prepared in the side face of said cartridge consist of an installed aperture slit, and aperture slit width of face is 1mm or more, and is characterized by being 0.7 or less times of the average outer diameter of said drugs sinking-in object.
xi) -- said -- granular or abbreviation -- the drugs vaporization approach of i that the average outer diameter of a granular drugs sinking-in object is 3mm - 10mm, and said drugs sinking-in object is characterized by filling up with 20% - 70% of voidage in said cartridge.
xii) -- said -- granular or abbreviation -- the drugs vaporization approach of i that a granular drugs sinking-in object is characterized by the thing which was chosen from paper, pulp, cellulose system support, and synthetic-resin support and which consist of a kind at least.
[0007]
[Embodiment of the Invention] the approach of <centrifugal-force> this invention -- setting -- granular or abbreviation -- a centrifugal force is made to act on a granular drugs sinking-in object In this case, a centrifugal force does so various effectiveness which is illustrated below.
1) granular or abbreviation -- although the granular drugs sinking-in object is beforehand filled up with the condition (for example, condition near the closest packing) suitable in a cartridge, since each grain is not being fixed, when an impact joins a cartridge or a cartridge is moved to it, since each grain moves, the restoration condition of said drugs sinking-in object changes. However, if a centrifugal force acts on said drugs sinking-in object on the occasion of use, a granular object will be pressed in the predetermined direction and a restoration condition with the suitable first stage or the restoration condition near it will be automatically reproduced by the centrifugal force.
2) if an operation of the centrifugal force to a cartridge is canceled -- each granular or abbreviation in a cartridge -- a granular drugs sinking-in object will be in the condition that it can move somewhat freely, and will change the location by rotation or migration. That is, with an operation and discharge of the centrifugal force to a cartridge, each moves and a granular drugs sinking-in object does so the same effectiveness as the case where it stirs as a whole.
3) granular or abbreviation -- when a centrifugal force is made to act on a granular drugs sinking-in object, in having a certain amount of [said drugs sinking-in object] flexibility, said drugs sinking-in object is pressed and is contracted, and if grant of a centrifugal force is canceled, said drugs sinking-in object will return to the magnitude of even if it expands. So, said drugs sinking-in object will repeat contraction and expansion in the repeat of rotation (use) of a cartridge, and a rotation halt (un-using it) of a cartridge, and the drugs inside said drugs sinking-in object are also extruded by the front face by this pump action, consequently drugs are used effectively.
4) granular or abbreviation -- since it will be conveyed with the wind force produced in case the drugs inside said drugs sinking-in object are extruded by the front face according to a centrifugal force and a centrifugal force is made to act if a centrifugal force is made to act on said drugs sinking-in object even when a granular drugs sinking-in object seldom has flexibility, the drugs inside a drugs sinking-in object can be used effectively.
[0008] The magnitude of a centrifugal force is suitably chosen in consideration of terms and conditions, such as a cartridge and the magnitude of a drugs sinking-in object and a configuration, and a class of drugs, the amount of vaporization. for example, the magnitude of a centrifugal force -- 1 of gravitational acceleration (9.8x102 cm/s2) / 1000 to 100 times -- concrete -- 9.8x10-1 cm/s2 - 9.8x104 cm/s2 you may be . Said drugs sinking-in object of filling up with 30% - 60% preferably especially 25% to 65% is [20% - 70% of voidage] good in said cartridge. Since the time amount to which airstream contacts a drugs sinking-in object becomes short when sufficient amount of drugs vaporization cannot be secured but voidage exceeds 70% on the contrary, since the flow of airstream worsens when voidage is less than

20%, sufficient amount of drugs vaporization is not securable. So, it is said within the limits and voidage is chosen suitably. By rotating the cartridge which contained the drugs sinking-in object, the wind force which a centrifugal force acts on said drugs sinking-in object, and is produced in this case can be used. A motor may perform rotation of said cartridge. As for said motor, it is desirable that either AC power supply or a dry cell can be driven, for example, it is one dry cell which is electrical-potential-difference 1.5V, and the thing which can 300-hour or more maintain the rotational frequency of 100 - 2000rpm is suitable.

[0009] Since the wind (airstream which flows into the airstream and/or the sirocco fan which flow out of a sirocco fan) produced with the sirocco fan will hit said drugs sinking-in object while a centrifugal force acts on said drugs sinking-in object if an airstream appearance [of a sirocco fan] and/or airstream close side is equipped with said cartridge, the vaporization effectiveness of drugs can be raised. Said cartridge may boil only the airstream appearance side of a sirocco fan, only an airstream close side may be equipped with it, or the both sides by the side of the airstream appearance of a sirocco fan and airstream close may be equipped with it. That what is necessary is just one or more pieces, two or more cartridges can be distributed suitably and the number of the cartridges with which a sirocco fan is equipped can equip an airstream appearance [of a sirocco fan], or airstream close side with them. In this case, said two or more cartridges may contain the same or the drugs sinking-in object into which different drugs were infiltrated.

[0010] It is desirable to choose the vaporization nature pyrethroid system insecticide which can adjust the amount of vaporization per hour to 0.01-0.5mg, and can do so insecticidal potencial sufficient with this dose as drugs used by > this invention about < drugs, a drugs sinking-in object, a cartridge, etc. as such drugs -- for example, general formula (I): -- [Formula 1]



(I)

(-- the inside of a formula, and X and Y are the same -- or it is different from each other, a hydrogen atom, a methyl group, a halogen atom, or a trifluoromethyl radical is expressed, and Z expresses a hydrogen atom, a fluorine atom, a methyl group, a methoxymethyl radical, or a propargyl radical --) -- the fluorine permutation benzyl alcohol ester compound expressed can be illustrated.

[0011] As an example of a compound expressed with a general formula (I) 2, 3, 5, 6-tetrafluoro benzyl-chrysanthemate (henceforth) 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl 3-(1-propenyl) cyclopropane carboxylate (henceforth) which are called compound A Compound B is called -- 2, 3, 5, 6-tetrafluoro benzyl -2, and 2-dimethyl-3-(2 and 2-dichloro vinyl) cyclopropane carboxylate (henceforth) Compound C is called -- 4-methyl -2, 3 and 5, and 6-tetrafluoro benzyl-chrysanthemate (henceforth) Compound D is called -- the 4-methyl -2, 3 and 5, 6-tetrafluoro benzyl -2, and 2-dimethyl-3-(1-propenyl) cyclopropane carboxylate (henceforth) 4-methyl called compound E - 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl-3-(2 and 2-difluoro vinyl) cyclopropane carboxylate (henceforth) 4-methoxymethyl called compound F - 2, 3, 5, 6-tetrafluoro benzyl-chrysanthemate (henceforth) Compound G is called -- 4-methoxymethyl -2, 3 and 5, 6-tetrafluoro benzyl -2, and 2-dimethyl-3-(1-propenyl) cyclopropane carboxylate (henceforth) Compound H is called -- 2, 3, 4, 5, the 6-pentafluoro benzyl -2, and 2-dimethyl 3-(2-clo low 2-trifluoro methylvinyl) cyclopropane carboxylate (henceforth) It is 4-propargyl or it calls Compound I. - 2, 3, 5, 6-tetrafluoro benzyl-3-(1-propenyl)-2, and 2-dimethyl cyclopropane carboxylate (Compound J is called henceforth) can be mentioned. Moreover, it is [- 2 2, 3, and 3-tetramethyl cyclopropane carboxylate (compound L) can also be illustrated.] 4-methoxymethyl as compounds other than a general formula (I). - 2, 3, 5, 6-tetrafluoro benzyl - 2, 2, 3, and 3-tetramethyl cyclopropane carboxylate (compound K) and 4-propargyl - 2, 3, 5, 6-tetrafluoro benzyl These compounds (drugs) may use one kind, or may use it combining two or more kinds of compounds (drugs). in addition, although

the optical isomer and geometrical isomer based on the asymmetrical carbon and the double bond of the acid section exist in the compound expressed with a general formula (I), of course, use of the mixture of such each and those arbitration is also included in this invention

[0012] The allethrin and PURARE thorin which are used as an active principle of the insecticide for heating evapotranspiration are lacking in vaporization nature on the service condition of this invention, and on the other hand, in a pyrethroid system insecticide, since the empentrin with the highest vapor pressure needs the amount of vaporization of 2mg or more per hour from the point of insecticidal potencial, it is not desirable. So, in the approach of this invention, the above compounds which have suitable vaporization nature in ordinary temperature are used.

[0013] As the quality of the material of the drugs sinking-in object used by this invention, although minerals support, such as synthetic-resin support, such as cellulose system support, such as paper, pulp, and a viscose, ethylene-acetic-acid vinyl system resin, and olefin BORIMA, and a calcium silicate, etc. is mentioned, for example, the paper of the natural origin, pulp, and cellulose system support are desirable especially. that these are granular or abbreviation -- it is granular and it is desirable to fabricate so that the average outer diameter may be set to 3mm - 10mm. By adopting such a configuration and magnitude of a drugs sinking-in object, said pyrethroid system insecticide inside a drugs sinking-in object shifts to a front face gradually, and becomes possible [holding the amount of vaporization stabilized over the long period of time]. On the other hand, if an average outer diameter is smaller than 3mm, the vaporization of drugs may produce a problem in the durability of insecticidal potencial by whether you are Sumiya, for example.

[0014] said -- granular or abbreviation -- the concrete configurations of a granular drugs sinking-in object may be various configurations, such as the shape of the shape of the shape of the shape of a globular shape and an ellipsoid, and an egg, cylindrical, a prismatic form, a cylinder, disc-like, and a corner guard, and an indeterminate form, and the magnitude may be various magnitude. Furthermore, you may use it combining the drugs sinking-in object of the various quality of the materials. When containing a drugs sinking-in object to a cartridge, the drugs sinking-in object of varieties with which the drugs sinking-in object of specific magnitude, a configuration, and the quality of the material may be contained to a cartridge, or magnitude and a configuration differ from the quality of the material may be mixed by the suitable ratio, and you may contain to a cartridge.

[0015] In addition to using it about a drugs sinking-in object combining the magnitude, a configuration, the quality of the material, and the drugs sinking-in object of varieties with which numbers differ, you may use it combining the drugs sinking-in object of varieties with which the classes of drugs with which it sank in differ. Moreover, it can also use complexly mixing the drugs sinking-in object of varieties with which the classes of magnitude, a configuration, the quality of the material, a number, and drugs with which it sank in differ etc. So, it is good to be able to obtain the very cartridge that contained such a drugs sinking-in object and that can renew varieties, and to use it according to an application, combining these cartridges suitably. For example, in order to equip the airstream appearance side of said sirocco fan, what has the annular configuration of said cartridge is desirable, and in order to equip the airstream close side of said sirocco fan, that whose configuration of said cartridge is disc-like is desirable.

[0016] It is desirable to infiltrate the 100mg or more of the above-mentioned drugs into said drugs sinking-in object on the whole in this invention. If there are few amounts of sinking in of drugs than 100mg, lack may arise in the durability of insecticidal potencial. On the occasion of sinking [of drugs] in, the various sinking-in means known from the former if needed, using a solvent, a diluent, a surfactant, a dispersant, a gradual release-ized agent, etc. are employable. Furthermore, unless trouble is caused to a drugs constituent at the vaporization engine performance by blending a stabilizer, perfume, a coloring agent, an antistatic agent, etc. with said drugs sinking-in object suitably, other insect killing with high vaporization nature, evasion components (for example, insect control perfume, such as hinokitiol, carvone, a safrole, citronellol, and cinnamaldehyde etc.), miticide, a germicide, a deodorant, etc. can be added, and it can also consider as a multiple-purpose drugs constituent. Moreover, if the indicator function (for example, discoloration function) which shows the terminal point of use in a drugs sinking-in object is given, it is much more convenient.

[0017] Although there are an approach of installing many aperture slits, for example, the approach of fixing and constituting a network in the installed electrode holder, etc. as an approach of preparing the aeration section in the cartridge used by this invention, it is not limited to these. However, in order to prevent dissipation of a drugs sinking-in object at the same time it secures sufficient permeability so that condensation of drugs may not affect the vaporization engine performance, in the case of an aperture slit, it is desirable to be 1mm or more and to make aperture slit width of face into 0.7 or less times of the average outer diameter of a drugs sinking-in object. As for the rate of a throat area ratio to the cartridge side-face area of the total aperture slit area, it is desirable to set it as 0.1-0.5, when it is a network on the other hand, a conductor spacing is 1mm or more, and it is desirable to set it as 0.7 or less times of the average outer diameter of a drugs sinking-in object.
[0018] The configuration and magnitude of said cartridge can be determined as arbitration in consideration of the structure of a drugs sinking-in object stowage. Although it is desirable to equip an airstream appearance [of a sirocco fan] and/or airstream close side with a cartridge like the above-mentioned, it is easy to be natural even if it is things other than this. Although it is easy to use the cartridge of the shape of a cylinder whose height is usually about 2-5cm whose outer diameter is 3-6cm as things other than the thing using a sirocco fan, for example, it is easy to load the body of drugs vaporization equipment with a cartridge and is convenient if the medial-axis part of a cartridge is made into the shape of hollow, and a configuration which inserts a part for nothing and this centrum in the revolving shaft of a body for example. In addition, the configuration of a cartridge may be a type with which the equipment with which it was an approximate circle drill-like, or the revolving shaft was prepared in the longitudinal direction is loaded.
[0019] It is good for the perimeter of said cartridge to make it the configuration which cannot touch the cartridge which equips with protective covers, such as the shape of the shape of a slit, and a mesh, and rotates a finger etc. The function of said protective cover may be given to some drugs vaporization equipments which contain said cartridge. Moreover, in order to prevent that drugs vaporize from the drugs sinking-in object contained to the cartridge before use, it is desirable to stick covered members (for example, seal tape etc.) on the aeration section of a cartridge. Said covered member is good to exfoliate just before use. If adhesive tape is used as said seal tape, since it can exfoliate easily, it is convenient. In addition, the slit bar parts of the slit bar of said cartridge or a protective cover may give the include angle of a twist suitable in the shape of a blade, in order to improve wind entirety.
[0020] said -- granular or abbreviation -- the average outer diameter of a granular drugs sinking-in object is 3mm - 10mm, and it is easy to use it, and over a long period of time, said drugs sinking-in object can be stabilized, and can vaporize the drugs of about 1 quantum, and the cartridge filled up with 20% - 70% of voidage in said cartridge has it especially practically. [desirable] said -- granular or abbreviation -- the ingredient (ingredient which combined a single ingredient or these single) which was chosen from paper, pulp, cellulose system support, and synthetic-resin support, for example although especially the quality of the material of a granular drugs sinking-in object was not limited and which consists of a kind at least -- said -- granular or abbreviation -- it is desirable as an ingredient which constitutes a granular drugs sinking-in object.
[0021]
[Example] Although the following examples and examples of a trial explain this invention still more concretely, said example and the example of a trial are the things only for explanation only, and this invention is not limited to these.
[0022] granular to an example 1 - below 2:, or abbreviation -- the example in the case of equipping an airstream appearance [of a sirocco fan] and/or airstream close side with the cartridge which contained the granular drugs sinking-in object is shown.
A) The outline block diagram of an example of a sirocco fan is shown in sirocco fan drawing 4 . The flank sectional view and drawing 4 (c) which drawing 4 (a) met the plan in drawing 4 (a), and drawing 5 (b) met the A-A line, and were cut are a bottom view. The vane 13 (it is curving for a while) projected inside at fixed spacing along with the inner circumference of the cylinder made from plastics is formed, and a sirocco fan 12 has the configuration in which the aperture slit 4 (not shown) was formed between

each vane 13. The motor applied part 15 supported by four arms 14 is formed in the center section of the sirocco fan 12. If a sirocco fan 12 is rotated by the motor, with the wind force produced by the vane 13, the air which flowed from the top-face side of a sirocco fan 12 will pass an aperture slit 4, and will flow out.

B) Preparation of a cartridge (example 1)

An example of the cartridge with which the airstream close side of a sirocco fan 12 is equipped is shown. in 200mg (2, 3, 5, 6-tetrafluoro benzyl-chrysanthemate) of compound A, an average outer diameter is about 6mm -- granular -- the drugs sinking-in object 1 which foaming cellulose bead [trade name:BISUKO pearl (Rengo Co., Ltd. make)] 3g was infiltrated, and was acquired was contained to the drugs sinking-in object stowage 3 of the disc-like cartridge 2 with an outer diameter [of 3cm], and a height of 1cm. the internal volume of the disc-like cartridge 2 -- 40cm3 it is -- voidage (the ratio of the internal volume which remains as an opening, without filling up with a drugs sinking-in object, %) is 50%. in addition, the disc-like cartridge 2 -- the side face -- method Mukai of height -- the overall length is mostly equipped with the aperture slit 4 (not shown) with a width of face of 2mm every (pitch spacing) 3mm. The flank sectional view in the condition of having equipped drawing 2 with the disc-like cartridge 2 of an example 1 at the airstream close side of a sirocco fan 12 is shown. or [that, as for the core of the disc-like cartridge 2, and its near, a centrifugal force does not act on the occasion of rotation of the disc-like cartridge 2] -- or in order to hardly act, the drugs sinking-in object 1 is not contained but it leaves as an opening. The disc-like cartridge 2 of the example 11 in the condition of not containing the drugs sinking-in object 1 to drawing 3 is shown. It is the flank sectional view of the disc-like cartridge 2 at the time of drawing 3 (a) meeting the plan of the disc-like cartridge 2 in drawing 3 (a), and drawing 3 (b) meeting an A-A line, and cutting. As shown in drawing 3 (a), many aperture slits 4, such as a wedge and a rectangle, are formed in the top face of the disc-like cartridge 2. As shown in drawing 2 , in order to attach the disc-like cartridge 2 of an example 1 in the airstream close side of a sirocco fan 12, the attaching part (for example, covering device) for holding the disc-like cartridge 2 to the airstream close side of a sirocco fan 12 is needed. An example of this covering device is shown in drawing 5 . Drawing 5 (a) is the flank sectional view showing the condition that the plan of a covering device 16 and drawing 5 (b) equipped the side elevation of a covering device 16 with the covering device 16, and drawing 5 (c) equipped the disc-like cartridge 2 of an example 11 with it. Many aperture slits 4, such as a wedge and a rectangle, are formed in the covering device 16 as well as the top face of the disc-like cartridge 2.

C) An example of drugs vaporization equipment equipped with the sirocco fan 12 which equipped drugs vaporization equipment 1 drawing 1 with the disc-like cartridge 2 of an example 1 is shown. Drawing 1 (a) is [the flank sectional view of said drugs vaporization equipment and drawing 1 (c) of the plan of drugs vaporization equipment and drawing 1 (b)] the bottom views of said drugs vaporization equipment. This drugs vaporization equipment has the small whole, and it is lightweight, and can carry it easily. Moreover, since it operates by the dry cell 8, it is the outdoors, for example, can also be used within tentorium.

D) Preparation of a cartridge (example 2)

An example of the cartridge with which the airstream appearance side of a sirocco fan 12 is equipped is shown. The drugs sinking-in object 1 which compound B [2, 3, 5, 6-tetrafluoro benzyl -2, and 2-dimethyl-3-(1-propenyl) cyclopropane carboxylate] 400mg was infiltrated into pulp 3g whose average outer diameter is about 3mm, and was acquired was contained to the drugs sinking-in object stowage 3 of the annular cartridge 2 with the outer diameter of 6.5cm, a bore [of 4cm], and a height of 2cm. the internal volume of the annular cartridge 2 -- 40cm3 it is -- voidage is 20%. in addition, the annular cartridge 2 -- the side face -- method Mukai of height -- the overall length is mostly equipped with the aperture slit 4 (not shown) with a width of face of 2mm every 3mm. The airstream appearance side of a sirocco fan 12 is equipped with the annular cartridge 2 of an example 2 at drawing 6 , and the condition of equipping with a motor 9 is further shown in a sirocco fan 12.

E) An example of drugs vaporization equipment equipped with the sirocco fan 12 which equipped drugs vaporization equipment 2 drawing 7 with the annular cartridge 2 of an example 2 is shown. Drawing 7

(a) is [the flank sectional view of said drugs vaporization equipment and drawing 7 (c) of the plan of drugs vaporization equipment and drawing 7 (b)] the bottom views of said drugs vaporization equipment. Since the airstream appearance side (periphery section) of a sirocco fan 12 is equipped with the annular cartridge 2, the centrifugal force and wind force accompanying rotation of a sirocco fan 12 act effectively, and its vaporization effectiveness of drugs is very good.

[0023] Example 1 of a trial : (examples 3-12 and the examples 1-4 of a comparison are included)

In addition to the drugs sinking-in object of said examples 1 and 2, according to the example 2, the various drugs sinking-in objects (examples 3-12 and examples 1-4 of a comparison) shown in the following table 1 were prepared. This was contained to the same cartridge (cartridge of drawing 6) as an example 2, the drugs vaporization equipment of drawing 7 was equipped with said cartridge, and the insecticidal potencial trial by the amount measurement of drugs vaporization and the following test method (continuation aerating process) was performed under the conditions used day for 12 hours per on the 15th and the 30th on the 1st. The result is combined and is shown in the following table 1. In addition, insecticidal potencial set initial knock down effect when transpiring the mosquito-repellent mat containing dl and d-cis- , transformer-allethrin (PINAMIN Town & Country) on conditions with a heating element heat sink temperature of 160 degrees C to 1.00, and showed it by the relative effective ratio.

[0024] Test method (continuation aerating process)

The cylinder made from plastics with a bore [of 20cm] and a height of 43cm is put on two steps, the cylinder (location into which a sample offering mosquito is put) both whose bores and height that were divided with the wire gauze of 16 meshes up and down on it are 20cm is carried, and a cylinder with a bore [of 20cm] and a height of 20cm is carried further. the cylinder of this four-step pile -- a base -- carrying -- the center (inside of the cylinder of the bottom) of a base -- drugs vaporization equipment -- placing -- drugs sinking in -- an insecticidal component in the living body is vaporized. And 20 sample offering **** are released to the 2nd step of cylinder out of a top, and the number of knock down of this sample offering mosquito in accordance with the passage of time is observed. All sample offering mosquitoes are moved to a clean polyethylene container after [of exposure] 20 minutes, sugared water is given 3%, and mortality is investigated 24 hours after preservation.

[0025]

[Table 1]

表１：各種試料の評価試験結果（１）

		薬剤含浸体		カートリッジ		モーター	揮散量(mg/12h)			殺虫効力		
		薬剤(mg)	含浸体材料 粒径(mm)	内部体積 (cm^3)	空隙率 (%)	回転数 (rpm)	1 d	15d	30d	1 d	15d	30d
実施例	1	化合物A 200	ビスコパール 6	40	50	1000	4.1	4.1	4.0	2.3	2.3	2.1
	2	化合物B 400	パルプ 3	40	20	2000	5.5.	5.4	5.4	2.6	2.5	2.5
	3	化合物C 200	ケイ酸カルシウム 10	40	70	600	1.1	1.1	1.1	2.1	2.1	2.1
	4	化合物D 250	エチレン一酢酸ビニール 7	40	60	1400	2.4	2.3	2.3	2.1	2.0	2.0
	5	化合物E 300	低 7	40	65	1000	3.3	3.2	3.2	2.8	2.8	2.7
	6	化合物F 400	ポリプロピレン 4	40	30	1400	3.5	3.5	3.6	2.6	2.5	2.5
	7	化合物G 100	パルプ 8	40	65	200	0.7	0.7	0.7	2.2	2.2	2.2
	8	化合物H 300	ビスコパール 7	40	60	1000	1.3	1.3	1.2	2.8	2.8	2.7
	9	化合物I 250	低 5	40	45	400	0.8	0.7	0.7	2.0	1.9	1.9
	10	化合物J 200	ビスコパール 5	40	45	1500	3.2	3.2	3.1	3.0	3.0	3.0
	11	化合物K 350	ビスコパール 5	40	45	1500	4.2	4.2	4.2	2.7	2.7	2.6
	12	化合物L 300	ビスコパール 5	40	45	1500	4.3	4.2	4.1	2.6	2.5	2.5
比較例	1	化合物A 50	ビスコパール 6	100	50	1000	3.8	0.5	0.2	2.0	0.6	0.3
	2	化合物A 200	ビスコパール 1	100	15	1000	8.6	0.4	<0.1	2.8	0.5	0.1
	3	ピナミンフォルテ 200	ビスコパール 6	100	50	1000	<0.1	<0.1	<0.1	0.1	0.1	0.1
	4	エムペントリン 400	ビスコパール 6	100	50	1000	15.2	7.1	0.8	1.3	0.7	0.1

According to the drugs vaporization approach of this invention, the amount of vaporization of drugs was stabilized over the long period of time for 30 days, and having held insecticidal potencial high in the meantime was admitted as shown in Table 1. That is, when the drugs vaporization equipment of drawing 1 equipped with the cartridge of the type of an example 1, especially the drugs vaporization equipment of drawing 7 equipped with the cartridge of the type of an example 2 are used, there is almost no aging of the amount of vaporization, and over 30 days, the insect-killing effectiveness is almost fixed and it turns out that it has the outstanding stability with time.

[0026] On the other hand, the durability of insecticidal potencial ran short that the amount of sinking in of drugs was less than 100mg like the example 1 of a comparison, and like the example 2 of a comparison, also when the particle size of a drugs sinking-in object was smaller than 3mm, the vaporization engine performance by which the amount of vaporization fell with time and was stabilized could not be done so. furthermore, the example 3 of a comparison -- like -- the former like dl and d-cis- , transformer-allethrin (PINAMIN Town & Country) as drugs -- electric mosquito-repellent one -- business -- use of pyrethroid hardly vaporized these drugs in ordinary temperature in the wind force accompanying a centrifugal force. Furthermore, since adjustment of the vaporization engine performance of drugs was difficult and the basic insect-killing activity over a mosquito was low like the example 4 of a comparison when empentrin with vapor pressure high as drugs is used, effectiveness like the drugs vaporization approach of this invention did not do so.

[0027] Based on drawing 8 and drawing 9 , an example 13 is explained below Example 13:. in 200mg

(2, 3, 5, 6-tetrafluoro benzyl-chrysanthemate) of compound A, an average outer diameter is about 6mm -- granular -- it contained to the drugs sinking-in object stowage 3 (refer to drawing 9) of the cylindrical cartridge 2 with an outer diameter [of 5cm], and a height of 3cm which shows the drugs sinking-in object 1 (refer to drawing 9) which foaming cellulose bead [trade name:BISUKO pearl (Rengo Co., Ltd. make)] 3g was infiltrated, and was acquired to drawing 8 (b). in addition, the cartridge 2 -- the side face -- method Mukai of height -- an overall length is mostly equipped with the aperture slit 4 with a width of face of 3mm every 3mm, and the outer case section of 1cm width of face of methods of inside is the drugs sinking-in object stowage 3 from the peripheral face. It inserts in the revolving-shaft section 6 of the body 5 of drugs vaporization equipment which shows this cartridge 2 to drawing 8 (c) (refer to drawing 9), and after equipping with the protective cover 7 further shown in drawing 8 (a), the motor 9 was rotated by 500rpm using the single dry cell 8. When it was used having placed this drugs vaporization equipment in the center of the room of 6 mats, it stabilized and changed, without the amount (about 4mg) of drugs vaporization per 12 hours per almost changing day, and was effective in prevention of a mosquito over 30 days. In addition, during use, since there was also no possibility of touching accidentally the cartridge which a rotation sound is not worrisome and is rotated, it was satisfactory also about usability.

[0028] Based on drawing 10 and drawing 11 , an example 14 is explained below Example 14:. Compound H(4-methoxymethyl - 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl-3-(1-propenyl) cyclopropane carboxylate)300mg and stabilizer dibutylhydroxytoluene (BHT) 20mg were infiltrated into abbreviation granular bead 4g whose average outer diameter is about 3mm by the product made from pulp, and the drugs sinking-in object 1 was acquired. As shown in drawing 10 , it was cylindrical, the drugs sinking-in object 1 was contained to the cartridge 2 with an outer diameter [of 3cm], and a height of 5cm which constituted that side face from ten side-by-side installation electrode holders 10 and a network 11 of 2mm of conductor spacings, and the body 5 of drugs vaporization equipment of drawing 11 was loaded with this cartridge 2. As shown in the body 5 of drugs vaporization equipment at drawing 11 (a), opening for vaporizing drugs is prepared in the part equivalent to the outside of a cartridge 2, and opening of said body 5 of drugs vaporization equipment also has the function of a protective cover to a cartridge 2. In addition, as the drugs vaporization equipment of drawing 11 is shown in drawing 11 (b), a revolving shaft is ****(ed) by the longitudinal direction, drawing 11 (a) shows a perspective view, and drawing 11 (b) shows a flank sectional view. This drugs vaporization equipment also matched the interior of the room, and showed sufficient mosquito prevention effectiveness over 30 days by use of 12 hours per day.

[0029] Example 2 of a trial : (examples 15-21 and the examples 5-8 of a comparison are included) In addition to the drugs sinking-in object of said examples 13 and 14, according to the example 13, the various drugs sinking-in objects (examples 15-21 and examples 5-8 of a comparison) shown in the following table 2 were prepared. The same drugs vaporization equipment (drawing 8 , drugs vaporization equipment of drawing 9) as an example 13 was loaded with this, and the insecticidal potencial trial by the amount measurement of drugs vaporization and the above-mentioned test method (continuation aerating process) was performed under the conditions used day for 12 hours per on the 15th and the 30th on the 1st. The result is combined and is shown in the following table 2.

[0030]

[Table 2]

表 2：各種試料の評価試験結果（2）

		薬剤含浸体		カートリッジ		モーター	揮散量(mg/12h)			殺虫効力		
		薬剤 (mg)	含浸体材料 粒径(mm)	内部体積 (cm^3)	空隙率 (%)	回転数 (rpm)	1 d	15d	30d	1 d	15d	30d
実施例	13	化合物A 200	ビスコパール 6	100	50	500	3.8	3.6	3.3	2.1	1.9	1.8
	14	化合物B 400	パルプ 3	100	20	1000	5.4	5.1	4.9	2.3	2.1	1.9
	15	化合物C 200	ケイ酸カルシウム 10	100	70	300	1.1	0.9	0.8	2.1	2.0	1.9
	16	化合物D 250	エチレン-酢酸ビニル 7	100	60	700	2.3	2.2	1.9	2.0	1.8	1.7
	17	化合物E 300	紙 7	100	65	500	3.2	3.0	2.8	2.7	2.6	2.4
	18	化合物F 400	ポリプロピレン 4	100	30	700	3.5	3.4	3.2	2.5	2.3	2.2
	19	化合物G 100	パルプ 8	100	65	100	0.5	0.5	0.4	2.1	1.9	1.8
	20	化合物H 300	ビスコパール 7	100	60	500	1.2	1.1	1.0	2.8	2.7	2.5
	21	化合物I 250	紙 5	100	40	200	0.7	0.6	0.6	1.9	1.8	1.7
比較例	5	化合物A 50	ビスコパール 6	100	50	500	4.0	0.2	<0.1	2.1	0.4	0.1
	6	化合物A 200	ビスコパール 1	100	15	500	8.3	0.3	<0.1	2.6	0.5	0.1
	7	ピナミンフォルテ 200	ビスコパール 6	100	50	500	<0.1	<0.1	<0.1	0.1	0.1	0.1
	8	エムペントリン 400	ビスコパール 6	100	50	500	12.4	7.7	1.6	1.1	0.7	0.1

[0031] According to the drugs vaporization approach of this invention, the amount of vaporization of drugs was stabilized over the long period of time for 30 days, and having held insecticidal potencial high in the meantime was admitted as shown in Table 2. On the other hand, the durability of insecticidal potencial ran short that the amount of sinking in of drugs was less than 100mg like the example 5 of a comparison, and like the example 6 of a comparison, also when the particle size of a drugs sinking-in object was smaller than 3mm, the vaporization engine performance by which the amount of vaporization fell with time and was stabilized could not be done so. furthermore, the example 7 of a comparison -- like -- the former like dl and d-cis- , transformer-allethrin (PINAMIN Town & Country) as drugs -- electric mosquito-repellent one -- business -- use of pyrethroid hardly vaporized these drugs in ordinary temperature in the wind force accompanying a centrifugal force. Furthermore, since adjustment of the vaporization engine performance of drugs was difficult and the basic insect-killing activity over a mosquito was low like the example 8 of a comparison when empentrin with vapor pressure high as drugs is used, effectiveness like the drugs vaporization approach of this invention did not do so.
[0032] When the result of Table 1 is compared with the result of Table 2, it turns out that it has the stability [excellent in especially the case where especially an airstream appearance side is equipped with a cartridge an airstream appearance / of a sirocco fan /, and/or airstream close side] with time so that clearly.
[0033]
[Effect of the Invention] Since it is the method which makes drugs vaporize and emit with the wind force which gives a centrifugal force to a granular drugs sinking-in object, and is produced in that case, there are no worries about a burn on the occasion of use. that the drugs vaporization approach of this invention is granular by un-heating, or abbreviation -- Moreover, since the drugs of about 1 quantum can be stabilized and vaporized over a long period of time, the outstanding insecticidal potencial which is

not in the former is held and it moreover excels in safety, usability, etc., It is very useful for the prevention application of unpleasant noxious insects, such as medically important insects, such as a mosquito and a fly, gnat, a chironomid, a clothes moth, KOIGA, and a carpet beetle, especially a mosquito. moreover -- since the small and lightweight drugs vaporization equipment which operates by the dry cell can be used for the drugs vaporization approach of this invention -- indoor and the outdoors -- ** -- **** application is possible, for example, it is very useful to prevention of the medically important insect within the tentorium in the interior of a room and a camp of a travel place, and an unpleasant noxious insect. Furthermore, since a different cartridge including the drugs sinking-in object with which various kinds differ can be exchanged and used for the drugs vaporization approach of this invention according to the purpose, it can respond to the harmful insect of varieties with one drugs vaporization equipment, and is wide. [of applicability]

[Translation done.]

* NOTICES *

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2.**** shows the word which can not be translated.
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CLAIMS

[Claim(s)]
[Claim 1] A granular drugs sinking-in object is contained to the cartridge which has the aeration section on a side face. granular or abbreviation -- It is the drugs vaporization approach of vaporizing the drugs into which said drugs sinking-in object was infiltrated under the situation that a centrifugal force acts on said drugs sinking-in object by rotation of this cartridge. said -- granular or abbreviation, while setting the average outer diameter of a granular drugs sinking-in object to 3mm - 10mm and infiltrating 100mg or more of drugs into said drugs sinking-in object on the whole The drugs vaporization approach which is 0.01-0.5mg per hour in the amount of vaporization about said drugs sinking-in object to drugs, and is characterized by using the drugs which can vaporize over 180 hours or more as said drugs.
[Claim 2] the magnitude of said centrifugal force -- 9.8x10-1 cm/s2 - 9.8x104 cm/s2 it is -- the drugs vaporization approach according to claim 1 characterized by things.
[Claim 3] The drugs vaporization approach according to claim 1 that said drugs sinking-in object is characterized by filling up with 20% - 70% of voidage in said cartridge.
[Claim 4] The drugs vaporization approach according to claim 1 characterized by rotating said cartridge by the motor.
[Claim 5] The drugs vaporization approach according to claim 4 that the rotational frequency of said motor is characterized by being 100 - 2000rpm.
[Claim 6] The drugs vaporization approach according to claim 1 characterized by equipping an airstream appearance [of said sirocco fan], and/or airstream close side with said cartridge.
[Claim 7] The drugs vaporization approach according to claim 6 characterized by the configuration of said cartridge being annular and equipping the airstream appearance side of said sirocco fan with said cartridge.
[Claim 8] The drugs vaporization approach according to claim 6 which the configuration of said cartridge is disc-like, and is characterized by equipping the airstream close side of said sirocco fan with said cartridge.
[Claim 9] Said drugs Following group:2, 3 and 5, 6-tetrafluoro benzyl-chrysanthemate (compound A), 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl-3-(1-propenyl) cyclopropane carboxylate (compound B), 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl-3-(2 and 2-dichloro vinyl) cyclopropane carboxylate (compound C), 4-methyl - 2, 3, 5, 6-tetrafluoro benzyl-chrysanthemate (compound D), 4-methyl - 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl-3-(1-propenyl) cyclopropane carboxylate (compound E), 4-methyl - 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl-3-(2 and 2-difluoro vinyl) cyclopropane carboxylate (compound F), 4-methoxymethyl - 2, 3, 5, 6-tetrafluoro benzyl-chrysanthemate (compound G), 4-methoxymethyl - 2, 3, 5, 6-tetrafluoro benzyl -2, 2-dimethyl-3-(1-propenyl) cyclopropane carboxylate (compound H), 2, 3, 4, 5, the 6-pentafluoro benzyl -2, 2-dimethyl 3-(2-clo low 2-trifluoro methylvinyl) cyclopropane carboxylate (compound I), 4-propargyl - 2, 3, 5, 6-tetrafluoro benzyl-3-(1-propenyl)-2, and 2-dimethyl cyclopropane carboxylate (compound J), 4-methoxymethyl [- 2, 2, 3,] - 2, 3, 5, 6-tetrafluoro benzyl - 2, 2, 3, and 3-tetramethyl cyclopropane carboxylate (compound K) and 4-propargyl - 2, 3, 5, 6-tetrafluoro benzyl The drugs vaporization approach according to claim 1 characterized by consisting of a kind of

compound chosen from 3-tetramethyl cyclopropane carboxylate (compound L) at least.
[Claim 10] The drugs vaporization approach according to claim 1 which much aeration sections prepared in the side face of said cartridge consist of an installed aperture slit, and aperture slit width of face is 1mm or more, and is characterized by being 0.7 or less times of the average outer diameter of said drugs sinking-in object.
[Claim 11] said -- granular or abbreviation -- the drugs vaporization approach according to claim 1 that the average outer diameter of a granular drugs sinking-in object is 3mm - 10mm, and said drugs sinking-in object is characterized by filling up with 20% - 70% of voidage in said cartridge.
[Claim 12] said -- granular or abbreviation -- the drugs vaporization approach according to claim 1 that a granular drugs sinking-in object is characterized by the thing which was chosen from paper, pulp, cellulose system support, and synthetic-resin support and which consist of a kind at least.

[Translation done.]

XP-002245526

AN - 1998-460003 [40]
AP - JP19970004749 19970114
CPY - FUMK
DC - P14
FS - GMPI
IC - A01M1/20
PA - (FUMK) FUMAKILA KK
PN - JP10191862 A 19980728 DW199840 A01M1/20 007pp
PR - JP19970004749 19970114
XIC - A01M-001/20
XP - N1998-359197
AB - J10191862 The method involves arranging chemical agent impregnation material (4) made of grain-like particles in a container (3). The impregnation particle is agitated by supplying air from a fan, by which the impregnation material is volatilized.
- ADVANTAGE - Enables stable dispersion for long period of time.
- (Dwg.3/3)
IW - CHEMICAL AGENT METHOD SUPPLY AIR FAN CONTAINER IMPREGNATE PARTICLE ARRANGE
IKW - CHEMICAL AGENT METHOD SUPPLY AIR FAN CONTAINER IMPREGNATE PARTICLE ARRANGE
NC - 001
OPD - 1997-01-14
ORD - 1998-07-28
PAW - (FUMK) FUMAKILA KK
TI - Chemical agent volatilization method - involves supplying air from fan to container in which impregnation particles are arranged to volatilize them

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the drugs vaporization approach the drugs of vaporization nature were made to vaporize in air using a fan's wind force.
[0002]
[Description of the Prior Art] What what hit the wind from a fan to the sinking-in object which holds drugs and has moderate permeability as the drugs vaporization approach it was made to vaporize and emit the drugs of vaporization nature into air by a fan's wind force defined a fan's wind force and the relation of permeability as by JP,61-182273,U again is known as JP,7-11850,A.
[0003] When the drugs with which each drugs sinking-in object in these Prior arts serves as a configuration solidified in the shape of one, therefore it sank into this are the drugs with high vapor pressure which are easy to vaporize, it is an effective means, but the following devices are needed, when vaporizing the drugs of difficulty volatility with low vapor pressure, or in vaporizing a lot of drugs at once.
[0004] That is, vaporization area of a (1) drugs sinking-in object is enlarged. (2) Enlarge the opening of the drugs sinking-in inside of the body, and promote passage of a wind. (3) It is strengthening a fan's output etc.
[0005]
[Problem(s) to be Solved by the Invention] When each above-mentioned device is carried out, the volume of the whole drugs sinking-in object becomes large, and a fan enlarges and energy efficiency worsens. And especially the increment in the volume of a drugs sinking-in object causes the following problems.
[0005] That is, a difference arises partially in the wind force which a drugs sinking-in object receives momentarily when a drugs [since the airflow per unit time amount becomes small by the air resistance of a drugs sinking-in object as the distance from the diffuser of each part of a (1) drugs sinking-in object, especially a wind becomes far] sinking-in object is large to the flow direction of a wind, this leads to the bias of the amount of vaporization from each part of a drugs sinking-in object, and it becomes the hindrance of stable drugs vaporization.
[0006] (2) Although stable vaporization is possible even if it is the drugs sinking-in object of the solidified configuration if the drugs with which it sank in are quickly equalized even when the situation of the above (1) arises, when a drugs sinking-in object becomes large, the migration length of drugs becomes long and equalization will take long time amount to it.
[0007] (3) Enlargement of a drugs sinking-in object also causes the fall of the airflow per unit time amount from the exhaust port (drugs vaporization opening) of a sinking-in object container by the problem shown above (1), and it is connected with the fall of the vaporization capacity to the room of drugs, i.e., the fall of drugs effect. Moreover, wind-force strengthening of the fan for solving this is waste of energy, and the effectiveness of strengthening is also bad, and it is economically disadvantageous.

[0008]
[Means for Solving the Problem and its Function] this invention person found out the solution means against each problem, as a result of repeating research wholeheartedly that the above-mentioned problem should be solved.
[0009] That is, in order to solve the trouble of the above (1), it became possible as a means to cancel dispersion by the part of the flow direction of the wind of a drugs sinking-in object by equalizing the carrier airflow to each drugs sinking-in object by making a drugs sinking-in object granular and making this drugs sinking-in object itself agitate. The test method and test result proving it are shown below.
[0010] The diffuser of a wind prepared the sinking-in object container of a with a bore height [10cm height of 8cm] cylinder which stretched the network up and down in the diffuser of the fan of 8cm angle, and considered as the testing device. 2g of granular drugs sinking-in objects with a diameter of 4mm which infiltrated 300mg of drugs into it was thrown in, and partial dispersion of the amount of residual drugs after making it drive for three days for 24 consecutive hours was measured.
[0011] Moreover, partial dispersion of the amount of residual drugs was measured also with the equipment which put the one apparatus fixed [honeycomb-like] drugs sinking-in object on the diffuser side of the fan of the 8cm angle same as an object. The result was shown in Table 1.
[0012]
[Table 1]

測定部位*	粒状の薬剤含浸体（本発明）	一体型固定式の薬剤含浸体（対照）
0～1cm	63．81	41．02
2～3cm	65．30	73．24
4～5cm	64．97	95．67

表中の数値は、薬剤の仕込み量を１００としたときの残存率を示す。

＊；測定部位は、薬剤含浸体中のファンの吹き出し口からの距離を示す。

[0013] The numeric value of front Naka shows the survival rate of the drugs when setting the charge of drugs to 100. moreover, a measurement part -- drugs sinking in -- the distance from the diffuser of a fan in the living body is shown.
[0014] When an one apparatus fixed drugs sinking-in object is used, the part near a fan's diffuser vaporizes well, a far part hardly vaporizes but 90% or more of drugs remain. Since drugs were vaporized while the drugs sinking-in object was always agitated when a granular drugs sinking-in object was used to it, the result which does not almost have the difference of the partial amount of survival was obtained.

[0015] Moreover, the following researches were done as a means to solve the above-mentioned trouble of (2). That is, a drugs sinking-in object is made granular, the drugs sinking-in object of each [increasing the number] becomes small, and the shift distance of drugs becomes short. Consequently, in connection with the vaporization of the drugs from the front face of a drugs sinking-in object, the supplement (equalization of drugs concentration) of the drugs from a core was performed promptly, and the stabilization vaporization of drugs became possible. Furthermore, how to add various solvents as a means to which equalization of the drugs in each sinking-in inside of the body is urged is also considered. This is an effective means when using drugs with a slow shift rate with high viscosity.
[0016] The result investigated about the vaporization pattern of the drugs when using a granular drugs sinking-in object and an one apparatus fixed drugs sinking-in object for Table 2 and drawing 1 using the same testing device as the above is shown. The drugs of congener and tales doses were infiltrated into each drugs sinking-in object, and the amount of vaporization per unit time amount when driving continuously for 15 days was presumed [initiation] from the amount of drugs survival in the 15th day on it on the 10th on the 5th.

[0017]
[Table 2]

薬剤含浸体	駆動日数（日）			仕込み量（mg）	残存量（mg）	有効揮散率（%）
	0～5	5～10	10～15			
粒状	2.64	2.50	2.33	1005	105.93	89.46
一体型固定式	2.59	2.18	1.29	998	273.65	72.58

[0018] Consequently, in the case of the drugs sinking-in object which the one apparatus fixed drugs sinking-in object made granular from drive initiation to the inclination for the amount of vaporization to fall off-like proportionally [abbreviation] being shown, the stable amount of vaporization is maintained. While it is this making a drugs sinking-in object granular and agitating this and the drugs concentration of the whole drugs sinking-in object becomes homogeneity While shift of the drugs in each drugs sinking-in inside of the body is performed, when drugs vaporize and weight decreases, the specific gravity of a drugs sinking-in object and drugs becomes small. It is considered to originate in the stability of the prolonged amount of vaporization that the fixed amount of vaporization is obtained even when drugs concentration becomes low as a result of the momentum of a drugs sinking-in object increasing. Moreover, even if the amount of survival on the 15th to the charge of the drugs shown in Table 2 comes out comparatively and it sees a certain rate of effective vaporization, in the case of a granular drugs sinking-in object, it turns out to an one apparatus fixed drugs sinking-in object being 72.58% that drugs are vaporized very as efficiently as 89.46%.
[0019] Furthermore, the following researches were done as a means to solve the trouble of the above (3). That is, the wind which a drugs sinking-in object receives turns into a wind received from a fan, and a wind received in case self rotates, and serves as a deployment of energy. Consequently, the total surface area of a drugs sinking-in object is small, and ends, and its loss of a wind force becomes less than the conventional thing. The result of having measured the wind speed in the distance of 5cm and 10cm upwards is shown in Table 3 from drugs vaporization opening at the time of making the same each true volume of a granular drugs sinking-in object and the drugs sinking-in object of the shape of a honeycomb of one apparatus. It was proved that a granular drugs sinking-in object shows a good result in the comparison with an one apparatus fixed drugs sinking-in object, and is large also in this trial, and there is little loss of a wind force. [of a wind speed]
[0020]
[Table 3]

測定位置	風速（m/sec） 粒状の薬剤含浸体	一体形固定式の薬剤含浸体	薬剤含浸体未設置
揮散口から上5cm	1．6	1．0	2．4
揮散口から上10cm	0．8	0．5	1．2
薬剤含浸体の真の体積（cm^3）	4．05	4．10	－

[0021] Each above-mentioned trial and its result showed the following. That is, in order to maintain the amount of vaporization stabilized for a long period of time, canceling dispersion by the part of a drugs

sinking-in object, and utilizing a fan's wind-force energy effectively, this drugs sinking-in object itself must be agitated moderately. For that purpose, this drugs sinking-in object needs to fulfill some conditions. It raises to below as the condition.

[0022] It is a matter concerning the configuration of a drugs sinking-in object to the 1st first. As for the configuration of a drugs sinking-in object required in order to make this invention, it is desirable that it is the stereo with which the configuration, i.e., the maximum area which both drugs sinking-in objects touch, where the frictional resistance which leads to loss of energy in the case of churning is small becomes 1/2 or less [of the total surface area]. Specifically, the globular form which is the fricative smallest configuration is the most desirable.

[0023] It is having the capacity urging prompt equalization in sinking-in capacity and vaporization capacity (emission capacity) with this moderate drugs sinking-in object, and the drugs sinking-in body of drugs as conditions required for a drugs sinking-in object, in the 2nd. It depends on the consistency of a drugs sinking-in object, i.e., voidage, for the capacity to urge vaporization and equalization to the sinking-in capacity of drugs depending on the true volume of a drugs sinking-in object.

[0024] What is necessary is just to adjust the true volume of a drugs sinking-in object required in order to make this invention to arbitration in the range which can be found from the voidage of a drugs sinking-in object, and the apparent volume, and is shown below according to physical properties, such as vapor pressure of the drugs to be used, and viscosity. the volume of the truth [range / that] of this drugs sinking-in object, i.e., [apparent volume x], (1-voidage / 100) -- per [5x10-5] grain - 5x105 mm3 -- desirable -- 5x10-3 - 5x103 mm3 -- further -- desirable -- 5x10 -two to 5x10 to 1 mm3 It becomes. And what is necessary is just to adjust the self-sustaining days of the amount of vaporization and effect to search for by the drugs concentration which sinks into the number of grains of a granular drugs sinking-in object and this which are used.

[0025] When the airflow per [to which the specific gravity of the drugs sinking-in object used / 3rd / for this invention passes through the inside of the sinking-in object container with which these drugs contain a sinking-in object] unit time amount is 0.01-1.0m3 / min, they are 0.005-0.5. However, when the airflow per unit time amount uses the large-sized fan 1.0m3 / more than min, specific gravity is able to use it 0.5 or more.

[0026] Furthermore as the 4th condition, it may process for generating-preventing or static electricity removing to this drugs sinking-in object, a sinking-in object container, or its both sides. Static electricity is because it may work as resistance which bars churning between both drugs sinking-in objects or a drugs sinking-in object, and a sinking-in object container.

[0027] The drugs which sank into this drugs sinking-in object were made for the drugs vaporization approach which starts invention of the 1st of this invention from the above-mentioned thing to vaporize, having put the drugs sinking-in object made granular into the sinking-in object container, having applied the wind from a fan to this, and agitating this drugs sinking-in object with a wind force.

[0028] Moreover, the best osculation area which both drugs sinking-in objects touch [the configuration of a drugs sinking-in object] was made for the drugs vaporization approach concerning the 2nd invention to be set to one half of the gross areas of each drugs sinking-in object.

[0029] Moreover, for the drugs vaporization approach concerning the 3rd invention, the true volume of a drugs sinking-in object, i.e., [apparent volume x], (1-voidage / 100) is per [5x10-5] grain - 5x105 mm3. It was made the range.

[0030] Moreover, when the airflow per [which passes through the inside of a sinking-in object container] unit time amount was 0.01-1.0m3 / min, the specific gravity of a granular drugs sinking-in object set the drugs vaporization approach concerning the 4th invention to 0.005-0.5.

[0031] Furthermore, the drugs vaporization approach concerning the 5th invention is processed at least to one side of the sinking-in object container which contains a drugs sinking-in object and this drugs sinking-in object for generating-preventing or static electricity removing, and was made to perform vaporization to it.

[0032]

[Embodiment of the Invention] The mode of operation of this invention is explained below. In addition,

this invention is not limited to these indicated contents. Various volatile drugs can be used for the drugs which a granular drugs sinking-in object is infiltrated in this invention, and are used according to the purpose of use.

[0033] For example, when using it for the purpose of insect killing, various kinds of vaporization nature insecticides used conventionally can be used, and a pyrethroid system insecticide, a carver mate system insecticide, an organic phosphorus system insecticide, etc. can be raised. Since safety is generally high, the pyrethroid system insecticide is used suitably, and the following can be illustrated as those examples. In addition, this the instantiation of each is indicated in order of a generic name and a chemical name (a trade name, manufacturer).

[0034] - Allethrin; 3-allyl compound-2-methyl cyclo PENTA-2-en-4-ON-1-IRU dl-cis- / transformer-chrysanthemate. ((Co., Ltd.) PINAMIN and Sumitomo Chemical)
- dl-d-T80-allethrin; 3-allyl compound-2-methyl cyclo PENTA-2-en-4-ON-1-IRU d-cis- / transformer-chrysanthemate. ((Co., Ltd.) PINAMIN Town & Country and Sumitomo Chemical)
- dl-d-T-allethrin; 3-allyl compound-2-methyl cyclo PENTA-2-en-4-ON-1-IRU d-transformer-chrysanthemate. (Biotechnology allethrin)
- d-d-T-allethrin; d-3-allyl compound-2-methyl cyclo PENTA-2-en-4-ON-1-IRU d-transformer-chrysanthemate. (ESUBIORU)
- d-d-T80-PURARE thorin; d-2-methyl - 4-oxo--3-propargyl cyclopent-2-enyl d-cis- / transformer-chrysanthemate. ((Co., Ltd.) ETOKKU and Sumitomo Chemical)
- Free-wheel-plate RUSURIN; N -(3, 4, 5, 6-tetrahydrophthalimide)- Methyl dl-cis- / transformer-chrysanthemate. ((Co., Ltd.) Neo PINAMIN and Sumitomo Chemical)
- d-T80-free-wheel-plate RUSURIN; (1, 3, 4, 5, 6, 7-hexahydro -1, 3-dioxo-2-indolyl) methyl d-cis- / transformer-chrysanthemate. ((Co., Ltd.) Neo PINAMIN Town & Country and Sumitomo Chemical)
- RESUME thorin; 5-benzyl-3-furil methyl dl-cis- / transformer-chrysanthemate. ((Co., Ltd.) Chris Ron and Sumitomo Chemical)
- d-d-T80-RESUME thorin; 5-benzyl-3-furil methyl d-cis- / transformer-chrysanthemate. ((Co., Ltd.) Chris Ron Town & Country and Sumitomo Chemical)
- Permethrin; 3-phenoxy benzyl dl-cis- / transformer -2, 2-dimethyl-3-(2, 2, dichloro vinyl) cyclopropane carboxylate. ((Co., Ltd.) EKUSUMIN and Sumitomo Chemical)
- FENO thorin; 3-phenoxy benzyl d-cis- / transformer-chrysanthemate. ((Co., Ltd.) Smith Lynne and Sumitomo Chemical)
- Fenvalerate; alpha-cyano-3-phenoxy benzyl-2-(4-chlorophenyl)-3-methyl butyrate. ((Co., Ltd.) SUMISAIJIN and Sumitomo Chemical)
- SHIPERUME thorin; alpha-cyano-3-phenoxy benzyl dl-cis- / transformer-3-(2 and 2-dichloro vinyl)-2, and 2-dimethyl cyclopropane carboxylate. ((Co., Ltd.) AGUROSURIN and Sumitomo Chemical)
- SHIFENO thorin; alpha-cyano-3-phenoxy benzyl d-cis- / transformer-chrysanthemate. ((Co., Ltd.) GOKIRATO and Sumitomo Chemical)
- En pen thorin; 1-ethynyl-2-methyl PENTO-2-enyl d-cis- / transformer-chrysanthemate. ((Co., Ltd.) Vapor SURIN and Sumitomo Chemical)
- Thera Reslin; 2-allyl compound-3-methyl-2-cyclopentene-1-ON-4-IRU - 2, 2, 3, 3, tetramethyl-cyclopropane carboxylate. ((Co., Ltd.) NOx phosphorus and Sumitomo Chemical)
- IMIPU loss phosphorus; 2, 4-dioxo -1 - (prop-2-inyl) Imidazolidine-3-(ylmethyl IR)-cis- / transformer-chrysanthemate. ((Co., Ltd.) PURARU and Sumitomo Chemical)
- Etofenprox; 2-(4-ethoxy phenyl)-2-methylpropyl-3-phenoxy benzyl ether [0035] Moreover, the following can be illustrated as other drugs (an insecticide, a repellent, an effect enhancement agent, growth control agent, etc.).
- ASETAMIPURORIDO; N'- [(6-chloro-3-pilus diyl) methyl]-N2-cyano-N' methyl acetone friend gene. (MOS pyran)
- Diazinon; (2-isopropyl-4-methyl pyrimidyl -6) - diethyl thio phosphate. (Diazinon)
- Fenitrothion, MEP;0, and 0-dimethyl-0-(3-methyl-4-nitrophenyl) thio phosphate. (Sumithion)
- Pyridaphenthion; 0 and 0-dimethyl-0-(3-oxo-- 2-phenyl-2H-pyridazine-6-IRU) phosphorothioate. (Off

nak)
- Marathon; dimethyl JIKARUBETOKISHI ethyl dithiophosphate. (Marathon)
- IMIDAKUROBURIDO; 1-(6-chloro-3-pyridyl methyl)-N-nitro imidazolidine-2-ylidene amine (bee KUSAN)
- DDVP;0 and 0-dimethyl 0-(2 and 2-dichloro) vinyl phosphate benzyl benzoate ISOBONIRU thio cyano acetate. (IBTA)
- A dehydroacetic acid and piperonyl butoxide. (P.B.)
- Parahydroxybenzoic acid, a phenyl salicylate, S-421, and N -(2-ethylhexyl)- The bicyclo [2, 2, 1]-hepta--5-en -2, 3-dicarboxyimide. (Cinepyrine 222)
- N and N-diethyl-m-torr amide (date)
- Pyriproxifen; 4-(phenoxyphenyl RS)-2-(2-pyridyloxy) propyl ether. (Sumi Love)

[0036] Next, as the quality of the material of an usable drugs sinking-in object, the porous body which cast synthetic fibers, such as inorganic substances, such as pulp, a viscose, a linter, or silicic-acid cull SIMM, or polypropylene, etc. as a raw material, for example, or activated carbon is raised to this invention. When the matter of the vegetable origins, such as pulp, a viscose, and a linter, takes into consideration specific gravity and drugs sinking-in ability especially, it is the most desirable as a raw material of a drugs sinking-in object. As the quality of the material marketed, there is a foaming cellulose bead (trade name: BISUKO pearl) by Rengo Co., Ltd. which used pulp and a viscose as the main raw material.

[0037] In order to urge prompt churning to a drugs sinking-in object as mentioned above, it is desirable to use the quality of the material with light specific gravity, and it is desirable to use the lightweight and advantageous plastics also in price no conductivity is [plastics] in the quality of the material of the sinking-in object container. However, plastics has the property which will be hard to reveal once it is charged that it is easy to wear static electricity by contact or friction on a front face. Therefore, for a drugs sinking-in object with light specific gravity, it is also possible to become the strong resistance in the case of churning, and to have bad effect on energy efficiency. Then, it is desirable to perform antistatic treatment to the drugs sinking-in object or sinking-in object container of this invention. Generally the art by the additive is widely used as an antistatic treatment method of plastics, and a surfactant is mainly used for this purpose. The ****** approach (scouring the crowded method) is in the approach (the surface applying method) and plastics which are applied to the art by the antistatic agent on the surface of plastics, and the anion which had the description, respectively, a cation, non-ion, and a both-sexes activator can be used. Moreover, the pharmaceutical preparation which uses a surfactant as a principal component according to each approach is marketed from each company. For example, there are "COL coat SP-2001" by COL coat incorporated company, "COL coat SP-2002", etc. which are characterized by transparency as "Sun stat A A" by Sanyo Chemical Industries, Ltd., "SANSUTATTO 2012A", "SANSUTATTO 249", and a conductive coating material.

[0038] Moreover, it is possible to use the antioxidant more than a kind, an ultraviolet ray absorbent, an aromatic, a deodorant, etc. for this invention other than drugs for the purpose of the addition of the improvement effectiveness in stability, the synergia effectiveness, and an addition function. Moreover, when the drugs of difficulty vaporization nature want to vaporize still more effectively, the method which heats a sinking-in object container, the fan itself, or an edge strip, and promotes vaporization is also considered.

[0039]

[Example 1] The drugs cartridge which covered the upper and lower sides of a with a bore height [10cm height of 8cm] cylinder in a network was prepared in the diffuser side of the SHIKO Research Institute, Inc. DC brush loess axial flow fan motor of 8cm angle, and 2g (foaming cellulose bead) of granular drugs sinking-in objects with a diameter of 2mm which infiltrated 300mg of PURARESU phosphorus into it was thrown in. And this equipment was shown in Table 4 at drawing 2 about knockdown effect as opposed to [transition / of the amount of vaporization with time when repeating 30 times at a drive and the interval stopped for 12 hours for 12 hours] the red house mosquito at that time. in addition, the drugs residue which extracted the amount of vaporization at this time from the drugs sinking-in object

for every fixed time amount, and carried out the quantum -- the value per unit time amount -- calculating -- being shown -- effect -- the closing space of 8 mats -- setting -- 25-degree C constant temperature -- the result examined on conditions was shown.

[0040] As shown in drawing 3 as equipment for describing above [an example 1], while carrying out the interior of the fan motor, it has the composition of having formed the sinking-in object container 3 which covered the upper and lower sides with network 2a and 2b in the shape of one on the body 1 which turned upwards the diffuser which this does not illustrate and carried out opening. In this configuration, when a fan rotates, a wind blows up from network 2b by the side of the bottom of a stowage container 3, the granular drugs sinking-in object 4 put in in this sinking-in object container 3 flows, the drugs with which it sinks into the drugs sinking-in object 4 in the meantime vaporize, and it both vaporizes from upper network 2a as the style of the above to the exterior.

[0041]

[Example 2] 1200mg sank in allethrin with the same equipment as [an example 1] at with a diameter of 2mm foaming cellulose bead 2g, and the knockdown effect over transition and the red house mosquito of the amount of vaporization was shown in drawing 2 and Table 4 according to the same test condition as [an example 1].

[0042]

[Example 3] 1000mg sank in Thera Reslin with the same equipment as [an example 1] at with a diameter of 4mm foaming cellulose bead 2g, and the knockdown effect over transition and the red house mosquito of the amount of vaporization was shown in drawing 2 and Table 4 according to the same test condition as [an example 1].

[0043]

[Example 4] 2000mg sank in en penny phosphorus with the same equipment as [an example 1] at with a diameter of 4mm foaming cellulose bead 2g, and the knockdown effect over transition and the red house mosquito of the amount of vaporization was shown in drawing 2 and Table 4 according to the same test condition as [an example 1].

[0044]

[Table 4]

薬剤名	薬量 (mg/2g)	薬剤含浸体直径 (mm)	ノックダウン効力、KT_{50} (min) 1回目	15回目	30回目
プラレスリン	300	2	2.33	2.57	2.74
アレスリン	1200	2	2.52	2.84	3.04
テラレスリン	1000	4	3.06	3.79	4.23
エスペンスリン	2000	4	5.29	5.33	5.47

[0045]

[Effect of the Invention] As described above, according to this invention approach, are concerned, there is nothing in the vapor pressure in which the drugs have the drugs of the vaporization nature which has the function of insect killing, evasion, and growth control to various noxious insects, and the target amount of vaporization, and the distributed operation stabilized with the wind force for a long period of time can be acquired.

[Translation done.]

* NOTICES *

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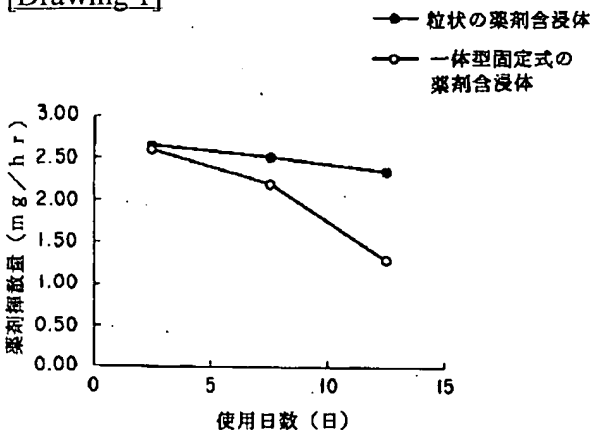
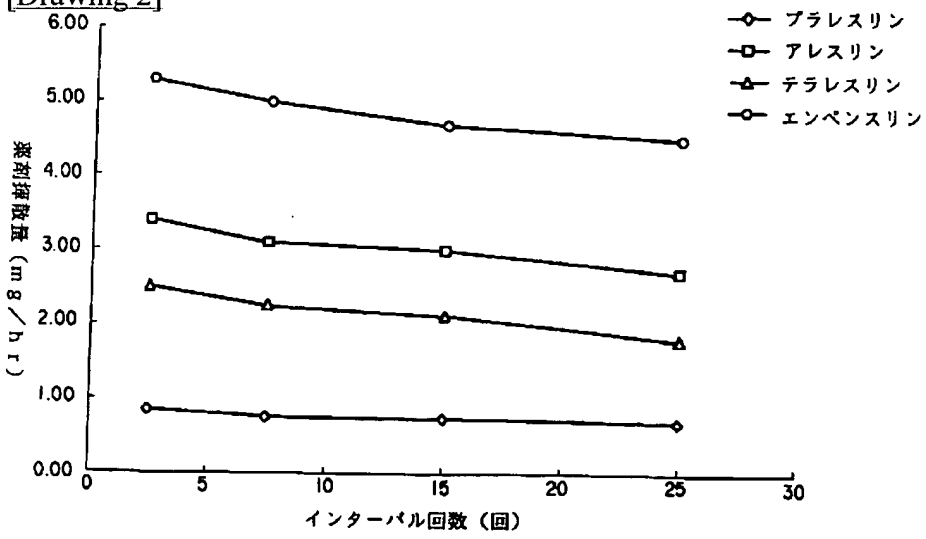
3.In the drawings, any words are not translated.

DRAWINGS

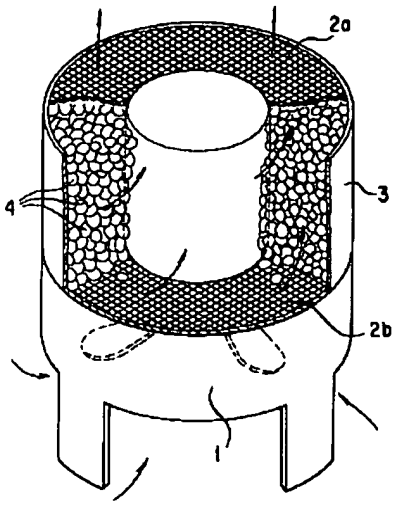
[Drawing 1]



[Drawing 2]



[Drawing 3]



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CLAIMS

[Claim(s)]
[Claim 1] A drugs vaporization approach characterized by making drugs which sank into this drugs sinking-in object vaporize, having put a drugs sinking-in object made granular into a sinking-in object container, having applied a wind from a fan to this, and agitating this drugs sinking-in object with a wind force.
[Claim 2] A drugs vaporization approach according to claim 1 characterized by making best osculation area which both drugs sinking-in objects touch a configuration of a drugs sinking-in object become 1/2 or less [of a gross area of each drugs sinking-in object].
[Claim 3] True volume (1-voidage / 100) of a drugs sinking-in object, i.e., [apparent volume x], is per [5x10-5] grain - 5x105 mm3. A drugs vaporization approach according to claim 1 characterized by being the range.
[Claim 4] A drugs vaporization approach according to claim 1 characterized by specific gravity of a granular drugs sinking-in object being 0.005-0.5 when airflow per [which passes through the inside of a sinking-in object container] unit time amount is 0.01-1.0m3 / min.
[Claim 5] A drugs vaporization approach according to claim 1 characterized by processing at least to one side of a sinking-in object container which contains a drugs sinking-in object and this drugs sinking-in object for generating-preventing or static electricity removing, and performing vaporization to it.

[Translation done.]

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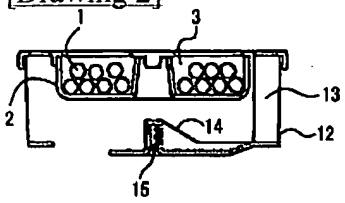
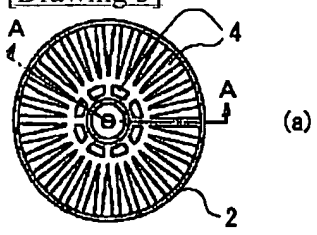
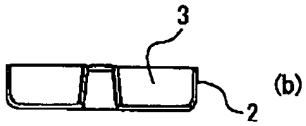
DRAWINGS

[Drawing 2]

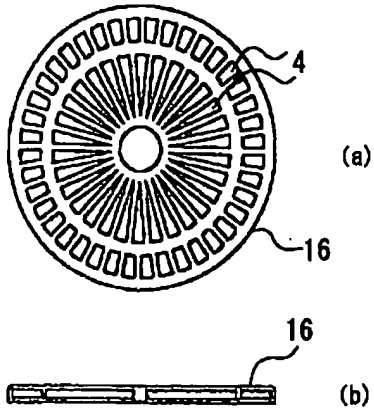


[Drawing 3]

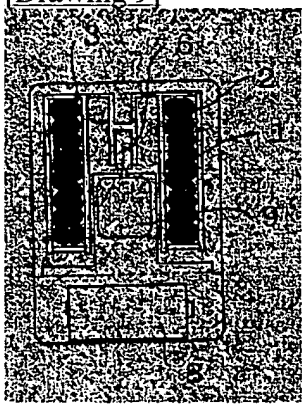




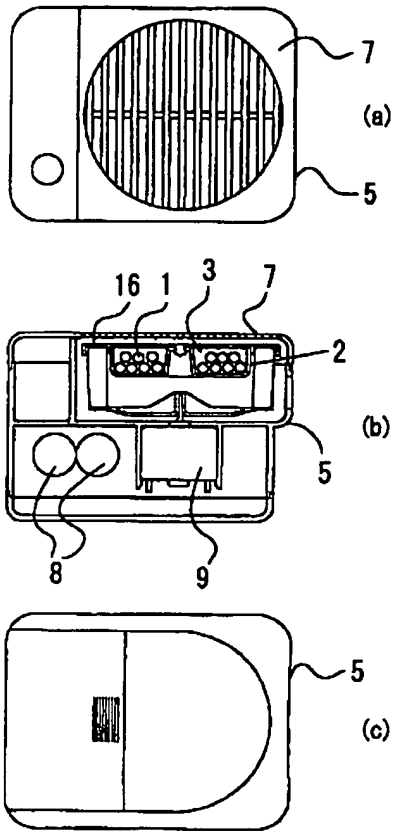
[Drawing 5]



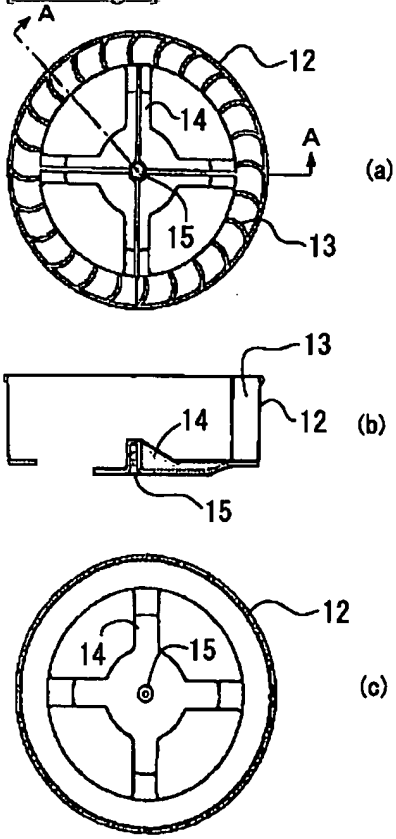
[Drawing 9]



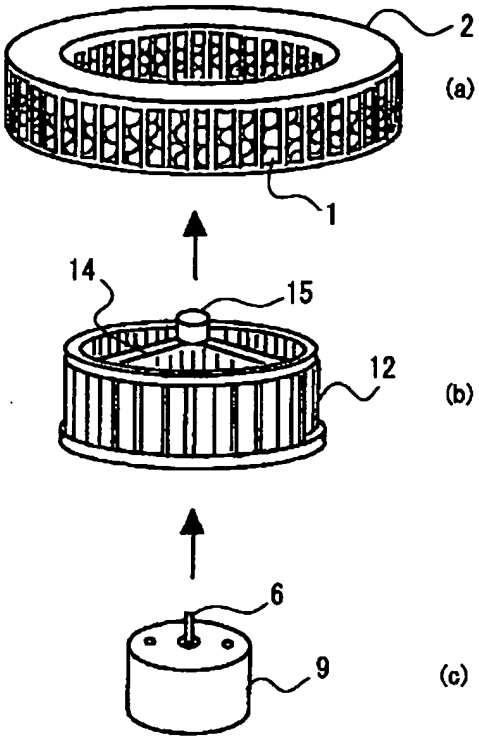
[Drawing 1]



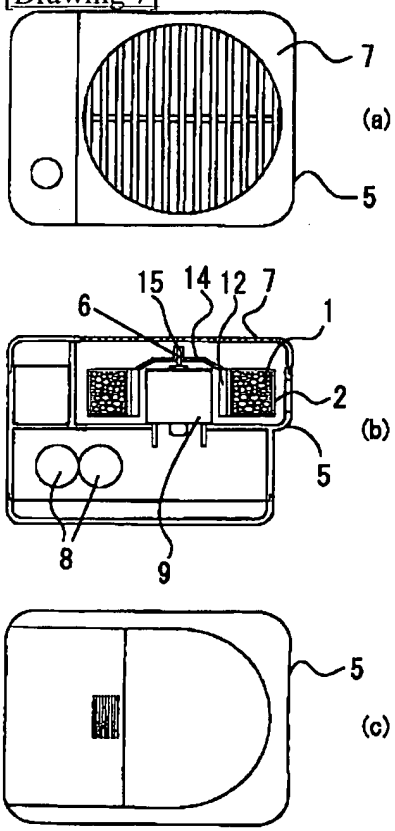
[Drawing 4]



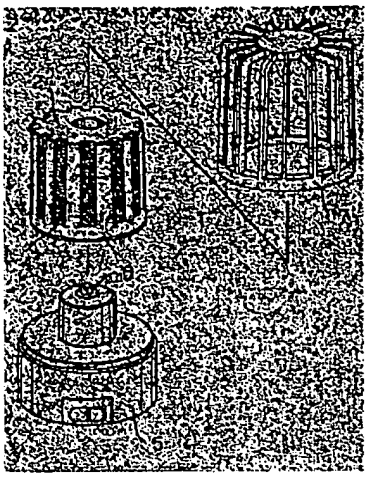
[Drawing 6]



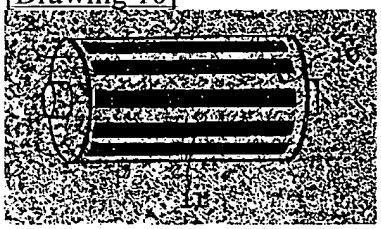
[Drawing 7]



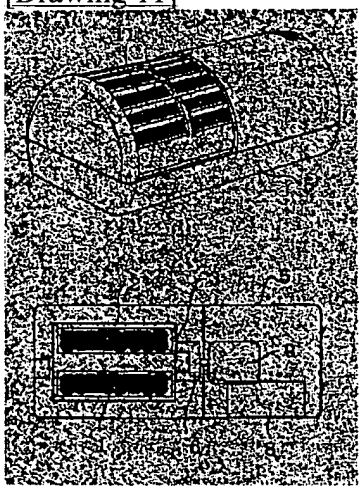
[Drawing 8]



[Drawing 10]



[Drawing 11]



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